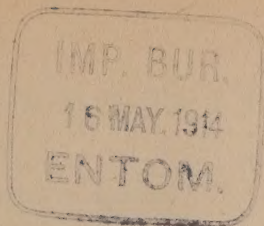


Miscellaneous



Agricultural Topics

ISSUED BY THE
NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION
RALEIGH, N. C.

BULLETIN No. 115



JUNE 22, 1895

372

Publications will be sent to any address in North Carolina upon application.

N. C. COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

THE NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION,

INCLUDING

THE FERTILIZER CONTROL STATION

AND THE STATE WEATHER SERVICE,

UNDER THE CONTROL OF THE

N. C. STATE BOARD OF AGRICULTURE.

W. F. GREEN, *Chairman*, Franklinton.

W. S. PRIMROSE	Raleigh.	J. H. GILMER	Greensboro.
D. A. TOMPKINS.....	Charlotte.	J. R. McLELLAND	Moorestville.
H. E. FRIES	Salem.	J. M. MEWBORNE	Kinston.
N. B. BROUGHTON	Raleigh.	H. E. KING	Peanut.
R. W. WHARTON	Washington.	E. A. AIKEN	Jeptha.
J. B. COFFIELD	Everett's.	J. L. NELSON.....	Lenoir.
W. R. CAPEHART	Avoca.	FRANK WOOD	Edenton.

STATION COUNCIL.

A. Q. HOLLADAY,

W. S. PRIMROSE,

H. B. BATTLE.

Pres. A. and M. College.

OFFICERS OF THE EXPERIMENT STATION.

H. B. BATTLE, PH. D.	Director and State Chemist.
F. E. EMERY, M. S.	Agriculturist.
GERALD MCCARTHY, B. SC.	Botanist and Entomologist.
W. F. MASSEY, C. E.	Horticulturist.
C. F. VON HERMANN (U. S. Weather Bureau).....	Meteorologist.
F. P. WILLIAMSON, D. V. S.	Consulting Veterinarian.
B. W. KILGORE, M. S.	Assistant Chemist.
F. B. CARPENTER, B. S.	Assistant Chemist.
W. M. ALLEN	Assistant Chemist.
C. B. WILLIAMS, B. S.	Assistant Chemist.
ALEXANDER RHODES	Assistant Horticulturist.
ROSCOE NUNN (U. S. Weather Bureau).....	Assistant Meteorologist.
A. F. BOWEN	Secretary.

RALEIGH, N. C.

PREFACE.

The accompanying bulletin is another instalment of the press service matter supplied to newspapers throughout North Carolina, as well as to other agricultural journals. It is reprinted as a regular publication of the Station, because in many instances results of tests are given which are not recorded elsewhere. It affords also a convenient medium for distributing collectively the short reading articles prepared with much care for newspaper columns. The parts inserted herewith were issued during July, 1894, and March, 1895. In republishing these articles, the Station relies on the favor with which similar publications have been received in the past, as well as upon one of the mandates of the Hatch Act in endeavoring 'to aid in acquiring and diffusing useful and practical information on subjects connected with agriculture.'

H. B. BATTLE, *Director.*

THE EXPERIMENT STATION



AT RALEIGH, NORTH CAROLINA.

Why Pull Your Corn Fodder? Curing Cow

Pea Vines—Value of Corn and Cob

Meal—Cultivation of Onions—

Read Questions and Replies.

September 1894.

The Experiment Station Bulletins.

The standing offer is made to send the bulletins of the station to all in the state who really desire to receive them. Thousands of farmers have already taken advantage of this offer. Unless you really want to be benefited by them, please do not apply for them. If you desire to read them, write on postal card to Dr. H. B. Battle, Director, Raleigh, N. C.

Title Page Changed.

The title page of the bulletins of the North Carolina Agricultural Experiment Station has been somewhat changed in appearance. Now the subject of the publication is given the prominent part so that the readers can easily see what the bulletins contain.

The Chestnut and its Weevil.

It is a well known fact that the weevil damages to a great extent the chestnut as a market crop. This is made the subject of bulletin 105 of the North Carolina Experiment Station. The life history of this annoying insect is described, and how the parent beetle lays her eggs in the immature husk or burr of the nut when still on the tree. The eggs hatch and if the nuts remain upon the ground the worms in about ten days bore their way out and enter the ground to pass finally into the adult state during the coming spring. It is altogether impossible to prevent the beetle from laying her eggs on the native chestnut trees in the forests, but in cultivated orchards of Spanish or Japanese chestnuts the treatment would be the same as for the plum curculio. For treating the nests, the following plan successfully followed by an experienced correspondent is recommended: scald the nests by placing a bushel or so in a tub, pour enough boiling water over them to cov-

er one or two inches. Stir with a stick, allow to remain about five minutes, and the weevily nuts come to the surface and can be skimmed off and destroyed or fed to hogs. Put the good nuts in bags half full, and dry in the sun, shake and manipulate freely to hasten drying. The kernels thus treated remain soft and do not get flinty.

The Army Worms.

The weather this year has been exceptionally favorable to the army worms of which we have two general namely, *Laphygma frugiperda*, the southern army worm, and *Heliophila unipunctata*, the northern army worm. This year the latter genus is the more common but both are troublesome. These worms prefer soft green millet, corn, small grain, grass, and clovers. The southern worm eats fruit and vegetables. They do not molest cotton, cow peas, peanuts, or tobacco; nor can they damage dry cured fodder, or ripened grain shocked or standing in field. They never damage fodder or grain in barn.

REMEDIES: When these worms attack a grass or forage field cut the crop at once and haul into barn or rake up into windrows as soon as cut. Have a man follow and spray or sprinkle with kerosene emulsion, or pure kerosene oil, or boiling hot water upon the worms which will be found covering the ground. The forage may then be cured as usual in field. To prevent advancing worms from getting into a field, plow a long, wide and deep furrow across their line of march, 5 or 6 feet outside the field to be protected. The land side must be towards the protected field, and should be cut under if practicable. When the advancing worms have half filled this furrow pile straw or dry pine tags upon them and fire; or plow another furrow just inside the last, throwing the dirt upon the worms. Roll or stamp this hard. Repeat furrows as often as necessary. When crossing roads or bare ground the worms may be crushed by driving a heavy roller over them, or kerosene may be sprayed upon them or dry straw or litter may be scattered and fired. They may be poisoned by Paris green, but this remedy is not desirable when the crop is to be utilized as forage. As soon as full grown the worms will enter the ground and change to the dormant pupa state in which they will remain until spring. Fields in which the worms have worked this fall should be deeply plowed and rolled heavily or stamped as soon as the worms are gone. This will bury the pupae so deeply they will not reach the surface in spring. Fall crops may be

sown as soon as the worms begin to disappear. Gerald McCarthy, Entomologist North Carolina Experiment Station.

Crimson Clover in 1894.

[A crop of seed \$44.61 per acre.]

It is worth while to spread the fact to every farmer that this clover can and will bring dollars to him if he will but grow it.

This crop starts and grows to full maturity and dies between August and the following June. It will start among corn, cotton, or other crops and need not interfere with the crop for the latter part of the season in which it is sown. When the summer crop is gone, crimson clover takes the soil and provided it is not too poor, covers it with verdure and increases its fertility while preventing the unsightly washing which frequently occurs without its presence. It only holds the ground for a short time in spring against other crops. If grazed, no delay need be experienced in plowing for early crops but we would plow all other ground first, as the later this is left the more good it will do stock and land, and the better it will be for the following crop.

If it is made into hay the last of April will see it harvested and the weather will be propitious for hay-making. Indeed, it may well be questioned if it would not be better, for a cotton crop, to have the land in this clover for hay to cut at the time when cotton has usually hardly started in sickly yellow growth, and then turn the land at once and plant the cotton. The roots and stubble will have mellowed the soil and added a rich supply of plant food to push the cotton crop and save a heavy bill for fertilizers. If the crop is late it will doubtless make up the time in more rapid growth and if it is not quite so far advanced when bolls begin to rot some years in August, it may be as well for the crop. At any rate corn can be planted after crimson clover has been cut for hay or seed, and will find its best development after such a crop.

Now is the time to purchase seed and start to growing this valuable crop. Seed is cheaper than for years before. We would advise those who start to at least save their own seed.

To show some of the possibilities in this crop, a statement is appended of the crop grown on the experiment station farm in 1894. This is only what any farmer may equal or exceed, but it shows a profitable use of land for the winter months. Of four acres in clover $2\frac{1}{4}$ were harvested in good order while $1\frac{1}{2}$ acres were storm-beaten when ripe. The yield of seed in hulls on the unhurt portion was 1487 pounds per acre, valued at 3 cents per pound, a total of

\$44.61 per acre. On the storm-beaten portion the yield was 581 pounds per acre with a value of \$17.43 per acre. This straw has been fed just as though it were prime hay, and teams have worked as usual on it with usual grain food. Corn crop on the land is now better because clover has been grown there. After the clover was cut off, the land plowed well, although elsewhere it was rather too dry to plow. The soil was darker colored than before and harrowed easily to a fine seed bed. We could but consider this soil permanently improved.

A great quantity of seed has been grown in Delaware this year and growers are advertising it for sale at very moderate rates. F. E. Emery, Agriculturist, North Carolina Experiment Station.

The Weather in North Carolina During 1893.

The North Carolina Experiment Station has just published the seventh annual report of its meteorological division constituting the North Carolina state weather service for 1893. This report gives, in details, the various meteorological conditions in various parts of North Carolina during 1893. The subjects treated embrace; list of the publications during the year; the annual meteorological summary for the state (and the sixty-six separate stations whose reports were used for compiling it) including observations of pressure, maximum and minimum temperature, precipitation, state of the weather, wind direction, crop conditions miscellaneous phenomena, etc.; normals for North Carolina; list of meteorological stations, observers, and crop reports; work embraced in the monthly meteorological bulletins and the weekly weather crop bulletin; also weather and temperature forecasts, cold wave and frost warnings, and list of stations receiving them. A valuable feature of the report is the table of comparisons between principal points in North Carolina and prominent places in the United States and abroad. These comparisons embrace normal precipitation and temperature for the whole year, for each of the four seasons, and each month of the year.

The pamphlet embraces sixty-three pages, contains a well prepared table of contents and index, and is replete with valuable information on weather conditions in North Carolina. It can be procured by application to Dr. H. B. Battle, Director, Raleigh, N. C.

Self-Sucking Cows.

Since the issue of our previous press bulletin, on this subject, several communications have been received and two remedies proposed which our cor-

respondents are sure has proven efficient in curing the habit, in at least one case for the quassia method and several for the slitted tongue.

Boil a handful of quassia chips (can be found at any drug-store) for several hours in about one gallon of water. Wash the cows teats in this after every milking for ten days. Always wash every time before milking, using a gallon of clean water in which a spoonful of pearline has been dissolved. If the milk tastes of quassia feed it to the pigs. The bitterness of the quassia remains in the cow's memory and prevents further trials at sucking after the ten days.

The other method consists in slitting the tongue near the point used to draw up round the teat in the act of sucking. Fasten the cow securely, and drawing out the tongue slit it a little to one side of the middle $1\frac{1}{2}$ to 2 inches out towards the front and near the point. Then feed on soft bran mash for a few days until the wound heals and it will be impossible for the cow to suck after that. One correspondent tried chair frames and side bars until tired out and desperate, when the mutilated tongue cured the habit.

Still we should spend little time on any cow we do not know to be a good one. The time can be better employed. F. E. Emery, Agriculturist, North Carolina Experiment Station.

Advanced Summary of Meteorological Reports, for North Carolina, August 1894.

The North Carolina state weather service issues the following advanced summary of the weather for August, 1894, as compared with the corresponding month of previous years:

TEMPERATURE—The mean for the month was 74.7 degrees, which is 1.1 degrees below the normal. The highest monthly mean was 78.6 degrees at Lumberton; the lowest monthly mean was 65.8 degrees at Highlands. The highest temperature was 99 on the 9th at Saxon, on the 10th at Rockingham; the lowest 48 on the 5th at Blowing Rock, on the 6th at Bakersville. The warmest August during the past twenty-one years was in 1888, mean 78.5; the coldest in 1874, mean 73.3.

PRECIPITATION—Average for the month 6.13 inches, which is 0.04 inches above the normal. The greatest amount was 14.99 at Pantego; the least amount, 0.88 at Mt. Airy. The wettest August occurred in 1887, average 9.39. The duest in 1881 average 2.91.

WIND—Prevailing direction, north-east. The normal direction for August is southwest. Average hourly velocity 6.1 miles. Highest velocity, 38 miles per

hour from northwest on the 18th at Chattanooga, Tenn.

MISCELLANEOUS PHENOMENA—Fogs were frequent especially during the latter part of the month, and considerable hazy occurred in upper sky. Thunder storms occurred on every day except 7th, 22d, 23d, and 24th. Hail occurred 10th, 15th and 19th. Lunar Halos 21st; solar halos 11th and 25th. Two observers reported aurora early morning of 20th.

Questions and Replies.

The station will be glad to extend its usefulness by answering, as far as possible, questions on agricultural topics sent by any one in North Carolina who may desire to ask for information. Address all questions to the "North Carolina Agricultural Experiment Station, Raleigh, N. C. Replies will be written as early as possible by the member of the station staff most competent to do so, and when of general interest, they will also appear in these columns.

Scuppernongs Can Be Pruned.

"I am emboldened by your former kindness in asking for some information concerning grapes. There is an abandoned vineyard near here comprising several hundred scuppernong and two varieties of bunch grapes names unknown. These vines have in most instances fallen from the decayed trellises and lie in heaps on the ground, a prey to goats and cattle. Such fruit as matures is, of course, absorbed by negroes in the neighborhood. Now I wish to ask if, in your judgment, these old vines after ten years of neglect, could by pruning and manuring be given a renewed life? And could I cross or graft to advantage? G. W. S. Wilmington, N. C."

[Answered by W. F. Massey, Horticulturist, North Carolina Experiment Station.]

The notion still prevalent that the scuppernong grape and all the rotundifolia class will not endure any pruning, is an error. You can prune and get the old scuppernong up on a horizontal trellis without much risk, but it will be found that the branches have rooted fast to the ground in all directions, and it will probably pay better to select strong young shoots with masses of roots and detach them as independent vines for planting, rather than bother with the old stems. In such a mass of vines as you describe you can get hundreds of strong young plants.

Bones as Fertilizers and How to Utilize Them.

"I am trying to make a study of fertilizers, having lately engaged in fruit growing in vicinity of Southern Pines. I have much of it yet to learn. I would be glad to have you send me any bulletins you may have on fertilizers. I am much pleased with the one you sent me on fruits. I would thank you to give me information on the following points:

1. What is the actual value of bone meal as a fertilizer for fruits, especially grapes.
2. Do you think it would pay to buy bones at \$10.00 per ton and grind them in a hand bone mill?
3. Do you think it would impair the virtue of the bone to char it before grinding?
4. How would

old bleached bones compare with fresh ones in value? 5. Would it pay to simply break bones and plant pieces near each vine? 6. About what would be the value of tankage as a fertilizer per ton? 7. Any information you may give me in this connection will be very gratefully received. Is there any way of treating bones with acids that would be better and cheaper than grinding them? G. A. W., Wilmington, N. C.

[Answered by H. B. Battle, Director, North Carolina Experiment Station.]

Bone meal is a very valuable fertilizer for grapes, as well as other fruits. Grapes especially require it and can be greatly improved by its application. The phosphoric acid present is the material most utilized by the roots; there is some nitrogenous material present also, especially in fresh bones. It would pay to buy bones at \$10.00 per ton and grind them in a hand mill if the mill is effective and grinding will not cost you too much. The charring of the bone liberates the nitrogenous material and hence some of the value is lost. The same action results when bones are left to bleach in the sun. It would pay to break the bones as fine as can be conveniently done to be planted near the vines. It is not an uncommon thing to find roots of the grape vine entwining themselves completely around a piece of bone in the soil. The fertilizing ingredients of tankage are 9 per cent. of ammonia, and 11 per cent. of phosphoric acid, of which about 5 per cent. is available; comparing values as given ordinary fertilizers, this would equal about \$32.00 per ton. Treating bones on the farm with acids to dissolve them is not advisable because of the danger attending the operation. A plan found successful is the following: Dig a deep trench in soil not liable to leach, then lay down a layer of broken bones an inch or two, upon this lay similar layer of unleached hard wood ashes, repeating the process and wetting the layers until the trench is filled. It would be well also to have stakes at certain points in the mixture so that they can be withdrawn from time to time and water poured in the holes. This will tend to decompose the bones, but five or six months will be needed. As the decomposition will depend upon the quality of the bones, after this time if the bones are found not to be thoroughly decomposed you can fork over the material, lay down again with more ashes and wet the mixture and allow a longer time.

Hollow Horn and Hollow Tail.

Please state what causes the disease of cattle known as "hollow horn" and what is the remedy? Also how to prevent the disease. H. C. Collettsville, N. C.

[Answered by Dr. F. P. Williamson, Consulting Veterinarian, North Carolina Experiment Station.]

According to the popular idea, cows

have only two affections "hollow horn," and "hollow tail."

The method of diagnosis between the two is simply by exclusion. If the cow is unthrifty and the cause is not from "hollow tail," she is suffering from "hollow horn." If she is unthrifty and the cause is not from "hollow horn," she is suffering from "hollow tail." It furthermore seems as if the disease was at the option of the diagnostician (?) either "hollow horn" or "hollow tail."

The popular treatment of these popular diseases is simple, but radical. If your cow is suffering with "hollow horn," cut off the horns, she will never have "hollow horn" again. If she, at the mercy of her would-be helpers, is said to have "hollow tail," then it is that one more cow is doomed to be a "bob-tail" without the means to defend herself against the flies and insects that pester in the spring and fall. "Hollow horn," off with the horns! "Hollow tail," off with the tail! The diagnosis is simple; the treatment secures sure cure with no chance of recurrence.

We cite two cases in illustration to show the incorrectness of these common notions.

Case 1, October 9th, 1893. Patient—cow, age unknown. Appearance unthrifty, dry staring coat, pulse small, quick, breathing accelerated, temperature elevated. Had been running in oak grove several days eating large quantities of acorns. Man in charge was unable to decide whether she was suffering from "hollow horn" or "hollow tail." It was plainly a case of plenialvia, and a purgative dose was administered, followed by digestive tonics. The patient made quick recovery.

Case 2, April, 1894. Patient—Nice Jersey cow, age not known.

Had been treated for "hollow tail" some time before by a friend (?) of the owner. General unthrifty appearance, febrile symptoms. Put on tonics, (nux vomica and iron) is doing well.

That it is possible for the tail of a cow to suffer from many diseases that flesh and bone "is heir to" (caries of the bone, inflammation of the soft tissues, skin diseases of many kinds, diseases of the hair and follicles) we readily admit; but to take away from a poor dumb brute the only defence she has against a troublesome insect world for a fancied cause that has no existence in reality, is certainly unjust, if not barbarous.

As for the horns, it is probably a good thing to take them off, if properly done. Many dairy men have their entire herd dehorned, as they claim cows in state of domestication have no need for this mode of defense, that horns only cause trouble by wounding udders and other soft tissues.

THE EXPERIMENT STATION,



AT RALEIGH, NORTH CAROLINA.

Valuable Publications For Free Distribution—Keeping Sweet Potatoes and Tomatoes in Winter—Russian Thistle—Destroying Weevils.

Read Questions and Replies.

October 1894.

Recent Bulletins of the Experiment Station

Bulletins will be sent to addresses in North Carolina free of charge. To parties outside of the state a small fee of 6 cents each (10 cents each for Nos. 73 and 92) is charged, or 25 cents per year. Only a limited number can be sent to each address, and the Station therefore must request parties to confine their applications to actual needs. Apply to Dr. H. B. Battle, Director, Raleigh, N. C.

- No. 78. Some Injurious Insects, plates 37, pp. 32.
- No. 79. Facts for Farmers in Plain Language for Farmers' Reading, pp. 24.
- No. 80. Silos and Ensilage, pp. 17.
- No. 81. Feeding Cotton-seed Hulls and Meal for the Production of Beef, pp. 28.
- No. 82. Fertilizer Analyses and the Fertilizer Control for 1891, pp. 20.
- No. 83. Growing Celery in the South; Cultivation of Onions; Notes of Horticultural Work During 1891, Figs. 2, pp. 20.
- No. 84. Some Enemies of Truck and Garden Crops, Figs. 32, pp. 26.
- No. 85. The Late Crop of Irish Potatoes in the South, pp. 10.
- No. 86. Tobacco Curing by the Leaf; Cure on Wire and the Stalk Processes, pp. 32.
- No. 87. All Publications of the Station, from March, 1877, to September, 1892, pp. 20.
- No. 88. Fertilizer Analyses, and The Fertilizer Control During 1892, pp. 24.
- No. 89. Co-operative Field Tests During 1891 and 1892, pp. 48.

- No. 90. Practical Stock Feeding, pp. 32.
- No. 91. Some Experiments in Wheat Culture, pp. 20.
- No. 92. The Culture of Orchard and Garden Fruit, Figs. 91, pp. 148.
- No. 93. Feeding Experiments, pp. 48.
- No. 94. Horticultural Tests and Results with Vegetables, Fruits and Bulb Culture, pp. 20.
- No. 95. The Fertilizer Control During 1892, pp. 32.
- No. 96. Miscellaneous Agricultural Topics, Figs. 12, pp. 32.
- No. 97. Digestion Experiments, Fig. 1, pp. 48.
- No. 98. Some Leguminous Crops and their Economic Value, Figs. 9, pp. 40.
- No. 99. Thread Worm of Pork (*Trichina Spiralis*), Figs. 9, pp. 8.
- No. 100. Our Common Insects, Figs. 65, pp. 36.
- No. 101. The Progress of the Dairy Industry in North Carolina, pp. 8.
- No. 102. Encouragement to the Dairy Industry of North Carolina, pp. 12.
- No. 103. Miscellaneous Agricultural Topics, pp. 24.
- No. 104. Why Pull Your Corn Fodder, pp. 4.
- No. 105. The Chestnut and its Weevil, Nut Culture, pp. 12.
- No. 106. Practical Stock Feeding and Rations, pp. 44.

Keeping Sweet Potatoes Through the Winter.

The following method I have found to keep sweet potatoes in perfect order until June. Procure a good supply of pine straw from the woods in a dry time and keep it under cover ready for use. Dig the potatoes as soon as frost cuts the vines. If not convenient to dig at once, cut the frosted vines off at once, or they will harbor fungus growth that will damage the potatoes. Dig on a warm sunny day—lay the potatoes along the row as dug, and do not allow them to be bruised by throwing into piles. Handle at all times as gently as eggs. Allow them to lie in the sun during the day, and in the evening haul to a convenient place. Place a good layer, a foot thick, of pine or other straw on the ground, and on this, pile the potatoes in steep heaps, not over 25 bushels in a pile. Cover the piles thickly all over with the dry pine straw—now build a rough board shed over the piles, and let them remain until the weather grows colder, or until they have gone through a sweat and dried off. Then cover the heaps with earth six or eight inches thick and beat smooth. The important points are the sweating under the previous cover of the pine straw be-

fore covering with earth, very careful handling, and the board cover overhead. Dry earth keeps out more cold than wet earth. If for family use, put in smaller piles and take up an entire heap at once for use, keeping them in a dry warm place while using.—W. F. Massey, Horticulturist, N. C. Experiment Station.

Advanced Monthly Summary of Meteorological Reports for North Carolina, September, 1894.

The North Carolina State Weather Service issues the following advanced summary of the weather for September, 1894, as compared with the corresponding month of the previous years:

TEMPERATURE.—The mean for the month was 72.2 degrees, which is 2.0 degrees above the normal. The highest monthly mean was, 76.2 at Hatteras; lowest monthly mean, 63.2 at Highlands. The highest temperature recorded was 100 on the 9th, at Auburn; lowest, 39 on the 21st at Bakersville. The warmest September during past 21 years was in 1881, mean 74.9 degrees; the coldest, in 1875, mean 67.0.

PRECIPITATION.—Average for the month, 4.77 inches, which is 0.12 above the normal. The greatest amount was 7.93 inches, at Chapel Hill; least amount, 1.07 at Mt. Airy. The wettest September occurred in 1877, average for the state being 10.13 inches; the driest was in 1884, average, 2.04.

WIND.—Prevailing direction, northeast, which is the normal direction for this month. Average hourly velocity, 7.5 miles. Highest velocity, 60 miles per hour from the northeast, at Kitty Hawk, on the 27th.

MISCELLANEOUS.—Thunderstorms occurred at one or more places on the 1st, 2d, 3d, 4th, 5th, 8th, 9th, 10th, 11th, 12th, 17th, 18th, 24th.

Hail occurred on the 1st, at Lenoirville, Bailey, and Auburn.

Light frost reported at Blowing Rock on the 21st, and at Flat Rock on the 22d.

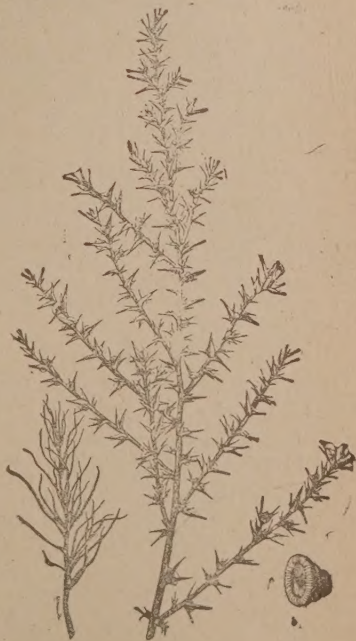
On the 27th a general storm prevailed, doing more or less damage to crops, especially cotton which was open in the field.

The Russian Thistle.

One of the most noxious of recent emigrants from Europe is the so-called Russian thistle, *Salsola Kali*, var. *tragus*. This weed is a native of Russia where it has long been known as a terrible pest in the wheat fields of that empire. In this country it first became troublesome in the wheat-growing sec-

tion of the Dakotas. It has since spread into many of the western and north-western states. Such is the magnitude of this pest that the Senate of the United States in the last session of congress, passed a bill appropriating \$1,000,000 for exterminating it, but the appropriation failed to become a law.

It is the nature of this weed when ripe to lose its hold upon the soil and roll up into a ball. In this form on the level windy prairies of the northwest it is blown for hundreds of miles, spreading its seeds far and wide. While growing each plant forms a thick close patch killing out the grain, and may in this way ruin an entire field. The seeds of this weed are liable to be brought to North Carolina and other Southern states with baled hay from the western states. While in our more hilly country the pest is not likely to become so injurious as it has now become in the west, it may still be able to cause the farmers of this state great loss.



RUSSIAN THISTLE.—(Mature form of one branch) b. represents a seed. The cut to the left shows a young branch.

The cut shows the general appearance of the mature thistle and seed, also a branch of a young plant. It is hoped that our farmers will keep a

sharp look out for this weed, and exterminate it as soon as it appears. It is a dry land plant and will be most troublesome on uplands.

The grave responsibility for introducing this and other noxious weeds such as the Canada thistle, must be accepted by those improvident farmers who buy and use western hay while living in a country able to produce as good hay and forage as any land upon which the sun shines.—Gerald McCarthy, Botanist, N. C. Experiment Station.

Error in Report of Crimson Clover Seed Yield for 1894.

A recent press article gave the crop of seed for this year grown at the Experiment farm at \$44.61, per acre. When this statement was made a portion of the field recently added, was unintentionally omitted from the calculation of the yield. We hasten to make the correction. This increased area would reduce the value of seed to \$31.86 per acre. However if the straw were included, the total value would be about as first reported.

The crop of unhulled seed in 1893 was 1,956 pounds per acre, which at the low price realized this year, would amount to \$58.68 per acre, or \$18.07 per acre more than the crop for 1894 as first reported.

The loss by weather-beating amounted to \$14.43, which is enough to emphasize the necessity of employing every means possible to save the crop in good weather. On this point the Experiment Station expects to have a seasonable article for next spring before the seed is ripe.—F. E. Emery, Agriculturist, N. C. Experiment Station.

Pea and Bean Weevils.

Many hundred bushels of garden peas and beans, cow peas and soja beans will be destroyed by weevils in this state during the coming winter, unless proper treatment be used. These weevils are two species of the genus *Bruchus* B. *pisi*, the pea weevil, is the larger and is blackish with white spots. It attacks only garden peas, never garden beans or the cow pea, which is a true bean. The bean weevil, *B. fabae*, is a rather small yellowish hairy insect. This weevil never attacks garden peas, but is the greatest pest of beans and cow peas. Both species lay their eggs, upon the growing pods in the field and garden. The eggs hatch in a few days and the young grub bores its way into the seeds. The grub lives within the seed until it has completed its growth and become a perfect or winged insect. The pea weevil never lays her eggs upon hard or mature

seeds; the bean weevil in a warm climate like ours, grows from the egg to the winged state in about two months. The female at once lays her eggs upon the hard and mature beans or cow peas, and these in turn mature and produce other insects and the process may continue, as many farmers know to their cost, until the whole package of beans or cow peas is consumed.

REMEDY.—The cheapest and most effective remedy for both weevils is Bisulphide of carbon. It is a good plan to run the seed through a fanning mill shortly after gathering. This cleans the seed and destroys many eggs on the bean. Garden peas and beans kept for seed and cow peas should always be treated with this substance before being stored away and as soon as possible after being harvested. Place the loose seeds in a tight barrel which should not be quite full. On top of the seeds place a saucer containing three or four tablespoonsful of the bisulphide. Cover the barrel tightly with a cover upon which should be placed a heavy cloth of any kind except rubber or oil cloth. The bisulphide will quickly vaporize and penetrate the entire mass of seeds killing every grub and beetle. Allow the covered barrel to stand for twenty-four hours, then remove the cover and permit the fumes to escape. Never bring a light into or near the room while the fumes can be smelled as bisulphide of carbon is very inflammable. The smell of this liquid is objectionable, but it is not lasting. The bisulphide may not kill the eggs and to insure complete satisfaction repeat the bisulphide treatment after thirty days. Bisulphide of Carbon may be ordered in quart or pint cans from any dealer in chemicals, for about twenty cents per pound. Most druggists can supply it in smaller quantities but at a higher price.—Gerald McCarthy, Entomologist, N. C. Experiment Station.

Ripening Tomatoes in Winter.

Among the many plans that have been proposed for saving the tomatoes which remain unripe at the coming of frost, we have found the following the most satisfactory:

When sharp frost is imminent gather all the green tomatoes. Wrap each separately in paper—old newspapers will do. Now pack them in boxes and store in a cool place, just warm enough to be secure from frost but not warm, the object being to keep, not to ripen them. Bring out a few at a time as they are wanted, and place in a warm place to ripen a few days in advance. In this way we have for several years had sliced tomatoes on our table up to the middle of January.—W. F. Massey, Horticulturist, N. C. Experiment Station.

Questions and Replies.

The Station will be glad to extend its usefulness by answering as far as possible questions on agricultural topics sent by any one in North Carolina who may desire to ask for information. Address all questions to the "N. C. Agricultural Experiment Station, Raleigh, N. C., Replies will be written as early as possible by the member of the Station staff most competent to do so, and, when of general interest, they will also appear in these columns. The Station desires in this way to enlarge its sphere of usefulness and render immediate assistance to practical farmers.

Variety of Asparagus for Planting.

"What kind of asparagus seed would you advise me to plant? Where can I get them? If I plant seed now can I expect any crop next spring?"—J. E. B. Manly, N. C.

(Answered by W. F. Massey, Horticulturist, N. C. Experiment Station.)

There is little difference in varieties of asparagus. Rich soil and good culture will make good shoots from any kind. The Palmetto is now the most popular sort. You can get the seed from any good seedsman. Seed sown in the spring and well cared for in good soil will make you good roots for setting the next fall, and the second year after setting you may get a fine crop. You will get no crop next spring from seed sown now.

To Destroy Sprouts and Stumps.

"What is the best way and when is the best time to destroy sprouts from an aspen tree which come up in my yard?"—H. B. B. Raleigh, N. C.

(Answered by Gerald McCarthy, Botanist.)

The aspen is botanically a poplar—*Populus tremuloides* and is one of the most inveterate sprouters. The best time to destroy the tree and so prevent future sprouts is about August 15, at which time the roots are nearly exhausted by the summer growth and have not yet begun to store reserve material for next years growth. To get rid of the tree now the best plan is to cut it down and dig out the main roots. Next year keep the sprouts closely cut off and they will soon die out. Patent root destroying chemicals are of very little value and cannot be depended upon.

Creamer, or Separator for Southern North Carolina.

"I want to buy a creamer. Will you please recommend the best make. The Cooley submerges the milk and requires ice. Without ice is the Cooley as good as any other make?"—E. B. C., Charlotte, N. C.

(Answered by F. E. Emery, Agriculturist, N. C. Experiment Station.)

The Cooley is as good as any gravity creamer we know, with or without ice. We would recommend you to think of a separator if you have as many as five or

six cows, or if not so many to increase the number and use one or both to reduce labor while saving its cost in butter over common methods of creaming. The gravity methods lose enough which the centrifugal saves to pay for the latter in a reasonable time.

The machines we have tried and can cheerfully recommend are, the Victoria and United States separators. The latter is made by the makers of the Cooley creamer. (The Vermont Farm Machine company, Bellows Falls, Vt.,) who will be reluctant to sell you a creamer to use in our climate without ice, but who know their separator will give you satisfaction here. The Victoria is sold by the Dairymen's Supply company, Philadelphia, Pa., and is a nice perfect acting machine.

Bees and Bee Worms.

"What will kill bee worms and what is the best time to move bees?"—M. S. C., Walnut Cove, N. C.

(Answered by Gerald McCarthy, Entomologist, N. E. Experiment Station.)

The "bee worm" is the larvæ form of a medium sized dark grey moth, *Galleria melonella*, a native of the old world but now everywhere introduced in this country. The most satisfactory remedy is to keep only strong colonies of Italian bees. These are so active that they will not permit the worms to remain in their hives if they can get at them. Only movable frame hives should be used. Another plan is to remove the frame, brush off all webs and kill the worms therein, then with a sharp pointed knife cut out the worms tunneling the comb. Where there are many frames infested they may be piled loosely or hung in a tight box or barrel and two or three tablespoonsful of carbon bisulphide in a saucer placed on top of the pile and the box or barrel covered tightly for twenty-four hours. Then remove the covering and expose the frames to the air till all odor of the carbon bisulphide has evaporated. Do not bring this substance near a fire or light as it explodes very easily. Pieces of comb, dirty frames, etc., should never be permitted to litter hive yards or honey houses as the worms breed in such.

As to moving bees if you mean to remove them to a house for the winter it should not be done until severe cold weather sets in or better still not at all. Use chaff hives or cover the hives with burlap sacks or padded sheets in cold weather. In this climate bees do not long remain dormant in winter. If you mean to remove bees from one location to another the best time is in early spring—two or three weeks before the bees begin to fly. The entrance to hives should be contracted until the bees have become accustomed to their new location.

THE EXPERIMENT STATION.



AT RALEIGH, NORTH CAROLINA.

Peach Orchard—Value of Manure—Weather During October—Improve Your Stock and Feed Rationally—Read Questions and Replies.

November 1894.

The Experiment Station Bulletins.

The standing offer is made to send the bulletins of the station to all in the state who really desire to receive them. They are specially prepared to be serviceable as far as possible to the practical farmer. Thousands of farmers have already taken advantage of this offer. Unless you really want to be benefited by them, please do not apply for them as we have none to throw away. If you desire to read them, write on postal card to Dr. H. B. Battle, Director, Raleigh, N. C.

Setting Out a Peach Orchard.

Use trees only one year from the bud, and don't buy them from a tree agent, but get them from a nurseryman who will not cheat you. In planting don't set them any deeper than they grew in the nursery. Trim the bruised ends of broken roots smooth with a sharp knife. Then trim off clean all the branches made in the nursery and cut the stem square off at the height you want to form the head, leaving the tree about the size of an ordinary walking-stick. When growth begins in spring the buds will start all along this stem. Rub off all except three or four at the top which will make the future head. The next winter these shoots should be shortened one-half and the same practice followed annually. Plant 16x16 feet and cultivate in a hoed crop. In fall sow crimson clover and plow it under in spring for manure.—W. F. Massey, N. C. Experiment Station.

Value of One Day's Cow Rations as a Fertilizer.

The ration, costing about 22 cents per day, fed a certain cow at the State Fair of 1894, consisted of the following amounts:

	Nitro- gen.	Phos- gen.	Pot- ash.
32 lbs sweetpotato vines.....	1239		
20 lbs corn fodder (field cured).....	1539	.0427	.057
4 lbs cotton seed meal.....	2528	.1100	.070
8 lbs wheat bran.....	1892	.2068	.068
Total.....	7188	.3655	.195
Used by the cow (estimated at 20 per cent).....	1438	.0719	.039

Excreted for plant food.....575 .2876 .156

Taking the trade values of these adopted by this station for 1894: 5 cents per pound for potash and phosphoric acid and nitrogen, 18.2 cents, gives the following value for the plant food residue of the above ration:

.575 pounds nitrogen @ 18.2 cents....10.465 cents
.288 pounds phos. acid @ 5 cents.....1.440 cents
.156 pounds potash @ 5 cents......780 cents

Total valuation.....12.685 cents

Here is a saving of 12½ cents per day from the original ration, costing 22 cents, to be used in increasing the farm crops, provided none of it is lost.

Losses of nitrogen occur very easily. Just at the point, where the excrement is voided, 25 to 60 per cent of it is returned to the atmosphere unless especial care is taken to fix it by use of dry fresh soil or large amounts of gypsum. No homoeopathic doses can prevent the losses. Dry soil is best when freely used, because cheapest and more likely to be used in quantity to accomplish the object.

Suppose the loss to be 50 per cent. of nitrogen 5 cents per milch cow per day. This saved or even half-saved will pay high wages to the man in charge of a herd who saves it by keeping a quantity of fresh soil or gypsum on hand for it. Gypsum has an effect of its own on soil and crops by adding lime where deficient, which can be a help toward returning its cost where used.

This station has long used acid phosphate and kainit in equal parts by weight behind the cows to help save the nitrogen. Half a pound to three-fourths of a pound, per day and cow is sprinkled down after the stable is cleaned, so as to begin action on any liquid that comes in contact with it.—F. E. Emery, Agriculturist, N. C. Experiment Station.

North Carolina Weather During Oct. '94.

The North Carolina State Weather Service issues the following advanced summary of the weather for October 1894, as compared with the corresponding month of previous years:

TEMPERATURE.—The mean temperature for the month was 59.8 degrees, which is 0.1 deg. above the normal. The highest monthly mean was 65.9 degrees at Newbern; the lowest monthly mean was 51.2 at Highlands. The

Highest temperature was 90 degrees on the 1st at Southern Pines, the lowest was 24 on the 15th at Bakersville and Highlands. The warmest October during the past twenty years occurred in 1881, mean 66.4 degs.; the coldest in 1873, mean 55.8.

PRECIPITATION.—Average for the month 5.50 inches which is 1.84 inches above the normal. The greatest amount was 9.28 inches at Fair Bluff; least 1.98 at Bakersville. The wettest October occurred in 1887, average precipitation 6.72; the driest in 1892 average 0.92.

WIND.—Prevailing direction northeast, which is the normal direction. Average hourly velocity 8.2 miles. Highest velocity 60 miles per hour from the southwest on the 10th at Hatteras.

MISCELLANEOUS.—Number of clear days, 19, partly cloudy 5, cloudy 7, number of rainy days 7. Dates of thunderstorms 8d, 9th, 13, 25th, 26th, 27th, 28th, 30th; hail 9th 27th; the first light frost of the season occurred at Waynesville on the 5th; killing frosts occurred from the 14th to 16th at most stations except near the coast.

The cyclone of Oct. 8th to 9th caused heavy rains, and flooding of low lands in central and eastern part of state.

Flowering Bulbs in North Carolina.

The Experiment Station is investigating the question whether flowering bulbs for commercial purposes can be successfully grown in this state. A bulletin (107) has just been issued describing the propagation of a good many varieties of bulbs, as well as the adaptability of their growth to the soils of the central and eastern sections. The bulletin is illustrated with 23 life size cuts of bulbs grown at the Station. The growing of the bulbs require skill and experience, and it is not advisable for any one not possessing these to attempt it. If the Station demonstrates that some of our soils are suitable a large industry may be built up in our midst, and thousands of dollars annually will be brought to the state that otherwise would go abroad to Europe for import orders.

Improve Your Stock.

It has been well said that the male is half the herd. And yet how few of us practice on the side of improvement by making this smallest and least expensive half the best that will increase the value of our growing stock. The head of a small flock of sheep, when of a standard excellence, costs but a trifle more than a mere scrub, when the difference in the value of the progeny is considered. The difference arises from the prepotency of the thoroughbred male derived from generations of well-

fed and well-bred ancestors. The same is true of neat stock, of horses, of swine. It is often the case that the first cross from a thoroughbred sire produces an animal which for appearance and production of meat or milk is as profitable as though thoroughbred itself. The second and third cross from the pure bred sire, or, better, another of the same breed, becomes for all practical purposes as good as the pure breed except for breeding.

In a line of such breeding as this fatten the males for market as early as possible; whether as lambs or yearling mutton, or veal and beef. Those who have not tried a thoroughbred sire on common stock will be well pleased with the result, especially if they practice a rational system of feeding their stock. Well-bred stock can be easily reduced in production by careless or poor feeding, sufficient to more than counterbalance the gain in breeding.

It would be preferable to feed natives well than to grade up and lose the benefit of it by poor feeding. But let the advance be in both breeding and feeding, and good results will follow.—Frank E. Emery, Agriculturist, N. C. Experiment Station.

Rational Stock Feeding.

The Experiment Station is sending out a very valuable bulletin, (No. 106) entitled "Rational Stock Feeding." From the preface it is stated that there are in North Carolina a total of 2,410,576 head of stock of all kinds, valued at \$20,850,059, according to the State Auditor's last report. A saving in cost of feeding, placed as low as 15 cents per month, would amount to over \$4,000,000 annually. This publication of the Station seeks to show how this saving can be effected. The contents embrace the subjects of the composition and digestibility of food with definition of terms used, feeding standards and how stock rations can be calculated, and some rations fed by practical feeders in the state and others recommended for trial. Among these breeders are Captain B. P. Williamson, W. L. Kennedy, Holt & Homewood, Elias Carr, Jr., Dr. W. R. Capehart, Hackburn & Willets, and Baron d'Alinge, of the Biltmore estate, all giving valuable experiences. The information given in this publication can not be gotten elsewhere, and all farmers are advised to send for a copy. It is supplied free, as are all publications of the Station.

Rear Calves Only From the Best Cows.

Where a number of cows are milked it will always be noticed that some one is the best of the lot as to the amount of milk produced, or the length of profitable flow, or perhaps in production of

butter. A farmer can probably point out the best cow in the herd, but if he were asked to point out her descendants among the young stock, they might be found few and far below in appearance what might be expected from the dam, or grand-dam. Further inquiry might bring out the information that no male was kept for service on the farm. Also that no good sire could be procured, or that it was too far, or the service fee was too high where a desirable sire was kept. This is a short-sighted policy, and one which the progressive farmer will avoid. Don't use the nearest scrub when time is pressing, but keep a male in your own barn, selected especially to supply the kind of animals you want to have and such as you can take pride in showing your friends. The best way is to patronize the best sires within reach, and go with cash in hand.

All calves from the poorest cows should be killed at once and may be fed out to fowls. Unless you have a surplus of milk and cannot make a good use of it in some other way do not grow up veal calves. Where milk will sell for a fair price the calf will soon eat its head off. Better sell it to the hens for eggs and chicks.—F. E. Emery, Agriculturist, N. C. Experiment Station.

Questions and Replies.

The Station will be glad to extend its usefulness by answering as far as possible questions on agricultural topics sent by any one in North Carolina who may desire to ask for information. Address all questions to the N. C. Agricultural Experiment Station, Raleigh, N. C. Replies will be written as early as possible by the member of the Station staff most competent to do so, and, when of general interest, they will also appear in these columns. The Station desires in this way to enlarge its sphere of usefulness and render immediate assistance to practical farmers.

Tokay Grapes.

Will the Tokay grape vine thrive in this state? If it has not been a success, upon what vine would you advise grafting it?—W. P. S., Southern Pines, N. C.

(Answered by W. F. Massey, Horticulturist, N. C. Experiment Station.)

The Tokay grapes (white and flame colored) belong to *Vitis Vinifera*, none of which have been perfectly successful in the United States east of the Sierra Nevada, except to some extent in Arizona and New Mexico.

The phylloxera insect destroys their roots, and they are very subject to attacks of mildew. Our native grapes being a "survival of the fittest," resist the phylloxera. There is some hope that now we understand the cause of the failure of the *Vinifera* section of grapes, we can overcome the difficulty

by grafting them on roots of our strongest growing natives, and by the use of spraying mixtures keep down the mildew and succeed in ripening the fruit. It is well worth trying, and our Station will do something in this line another year.

Value of Manure.

"In an agricultural paper some time ago I saw an article which strongly advocated the feeding of bran to stock. The writer of the paper stated that the value of the manure alone of the animals fed on bran was worth almost as much money as the value of the bran fed to them. I write to ask you if this is correct and shall take it as a favor if you will give me some information of the subject."

Bran at this point is worth a cent a pound. Stable manure (fair quality) \$1.00 per load. Do you think that if I were to feed milk cows as much bran as they will eat that their manure will be nearly worth what their feed cost.

I cannot understand how this can be. For instance, if I have a cow which is fairly well fed and which gives, say a couple of gallons of milk a day, I increase her feed giving her as much bran as she will eat. Her manure of course will increase in bulk and will also be richer in fertilizing materials than before, but the flow of milk will also be larger. Part of the bran has gone to form milk, and part of it has passed off as manure. Do you think that the larger quantity and better quality of the manure will nearly repay the extra cost of the increased feed, not counting the value of the extra milk obtained by feeding liberally?—G. F. O. Oakwoods, N. C.

(Answered by H. B. Battle, Director, N. C. Experiment Station.)

From the results of many experiments the general statement is correct that about 80 per cent, or four-fifths, of the manurial value in the original food can be recovered from the manure if properly taken care of. This does not mean that four-fifths of the value of the food stuff is utilized in this way but refers to the fertilizing ingredients originally present. For example, if the food stuff contains \$15.00 worth of fertilizing ingredients in it, then \$12.00 worth of these ingredients can be saved. The food stuff itself might be valued at \$20 for feeding purposes. Of course, cows and other animals need portions of the food, but they need less of the fertilizing ingredients than they do of the organic portions of the food—for instance—carbohydrates, nitrogen-free extract, protein, fat, etc., and these materials are more needed in the production of milk than the fertilizing ingredients.

Blue Joint Grass.

"Where can I get seed of Blue-joint grass which grows in the West and is referred to in the Patent Office report for 1888?"—S. H. H., Reidsville, N. C.

(Answered by Gerald McCarthy, Botanist, N. C. Experiment Station.)

Blue-joint or Blue-stem grass, *Agropyrum glaucum*, grows wild on the dry plains of the far west, but the seed is not on the market. It would not do well in this state. It is inferior to many grasses we now have. Bermuda grass is for our climate far more valuable

than Blue-joint. For hay Johnson grass, Tall oat, Tall fescue, and Orchard grasses are all excellent and do well in our state.

Destroying Wild Onions

"Can you give me some remedy for destroying wild onions? They are about to take some of my land."—W. R. W. Lewisville, N. C.

(Answered by W. F. Massey, Horticulturist, N. C. Experiment Station.)

The only practicable way to get rid of wild onions is by means of a systematic and short rotation, and the use of smothering crops. Plow the land before any top sets are found, and sow field peas, two bushels per acre. Cut the peas for hay, and chop the land over with a cutaway harrow, and sow in August crimson clover at rate of 15 lbs. per acre, with a thin scattering of winter oats. Cut oats and clover together for hay, and put the land in corn, and follow with winter oats and red clover. By the time this oat crop comes off, the onions will be about gone.

Mixing Fertilizers at Home.

I have been mixing my fertilizers for several years, and have been doing it blindly, not knowing what proportion to use.

1st. I want to know what is the best article I can get to produce phosphoric acid?

2nd. The best article for potash?

3rd. The best article for ammonia, price considered?

4th. What proportions of each to produce the best results?

5th. How high a per cent. of acid phosphate can be made?

6th. How high can guano be made of phosphoric acid, ammonia and potash?

7th. What per cent. of phosphoric acid, ammonia and potash is best for best results for general crops.

8th. I have been mixing—

200 pounds Acid phosphate,

100 pounds Cotton seed meal,

50 pounds Kainit.

What per cent. of phosphoric acid, ammonia and potash have I?—C. S. W. Franklinton.

(Answered by H. B. Battle, Director N. C. Experiment Station.)

I will answer your queries in the order as given.

(1) Acid phosphate is the best material to produce phosphoric acid, considering cost.

(2) The best article to furnish potash for ordinary usages is kainit.

(3) For ammonia, in our locality, cotton seed meal, considering also the cost.

(4) The best proportions found practicable as a general rule are:

1,200 lbs. Acid Phosphate,

600 " Cotton seed meal,

200 " Kainit.

(5) Acid phosphate seldom runs more than $13\frac{1}{2}$ or 14 per cent. available phosphoric acid. It should always be bought upon a definite guarantee, as any percentage can be made less than that amount according to the grade of the rock from which it is produced.

(6) It will depend entirely upon what ingredients are used as to the percentages of the three ingredients, phosphoric acid, potash, and ammonia in the

mixture. If a high ammoniating material is used, of course a high percentage can be procured; likewise the same of potash. The trucking fertilizers often run from 6 to 7 per cent. available phosphoric acid, 6 to 7 per cent. of ammonia, and 8 to 10 per cent. of potash. These can be changed according to the quantity of the different ingredients used.

(7) For average purposes for cotton and corn, the percentages given by the above mixture are about right, namely 8.55 per cent. available phosphoric acid, 2.55 per cent. ammonia, 1.68 per cent. potash.

(8) The proportions used by you, namely:

200 lbs. Acid Phosphate, 13 per cent.

100 " Cotton seed meal,

50 " Kainit

are useful. The percentages given by the mixture would be 8.14 per cent. available, 2.42 ammonia, and 1.96 potash. The proportions are so close to the above amounts that if you have found the mixture useful I see no reason to advise a change. I send Bulletin No. 95, in which you will find many references to the composition of fertilizing ingredients and their use in mixed fertilizers.

Asiatic Pears.

There is a nursery firm at Thomasville, Ga., who claim to raise pears from what they call Asiatic stock or from a kind of pear of Asiatic or Chinese origin: that the Le Conte and Kieffer pears are of this class and that they will not blight like those of European origin. Is there anything in their claims?—W. E. W., Avilla, N. C.

(Answered by W. F. Massey, Horticulturist, N. C. Experiment Station.)

The Kieffer and Le Conte pears can probably be claimed to be of Asiatic origin. Not that they came from Asia, but they are seedlings from the Chinese sand pear, crossed with one of our old sorts. It is generally thought that the Kieffer is a cross of the Chinese sand pear and the Bartlett. But so far as we can ascertain, nothing is certainly known of their origin, save that they were grown from seed of the Chinese sand pear, which was evidently accidentally crossed with something better. The Kieffer resembles the Bartlett in shape. The Le Conte is now quite commonly used as a stock for grafting other pears upon, and from its vigorous habits, and the ease with which the stocks can be raised in the south will probably be a popular stock for pears in the future. But that working a pear on the Le Conte stock makes it blight proof is all nonsense. The Le Conte does seem itself to be less liable to blight, but no pear is exempt from it in this country, though some blight worse than others. The great vigor of the Le Conte stock may make the trees grow, or better able to recover from an attack, but it will not give them immunity.

THE EXPERIMENT STATION



AT RALEIGH, NORTH CAROLINA.

Fertilizer Analysis for 1895—Hog Cholera,
Cotton Seed Feed, Ox Warble Fly.

Read Questions and Replies.

February 1895.

The Experiment Station Bulletin.

The standing offer is made to send the bulletins of the station to all in the state who really desire to receive them. They are specially prepared to be serviceable as far as possible to the practical farmer. Thousands of farmers have already taken advantage of this offer. Unless you really want to be benefitted please do not apply for them as we have none to throw away. If you desire to read them, write on postal card to Dr. H. B. Battle, Director, Raleigh, N. C.

Fertilizer Analysis for 1895.

A bulletin has already been issued by the experiment station (No. 111) which gives in detail the standing of all fertilizer brands on sale in North Carolina in 1894, as determined by analyses of samples taken by official inspectors. This bulletin is issued in advance of the new analyses which are issued every two weeks during the season of 1895. The first of these bi-weekly analyses will appear on Feb. 16, 1895. A special application is needed for this series. Apply to Dr. H. B. Battle, Director, Raleigh, N. C.

The valuations of the unmixed ingredients at the seaboard have been fixed at 4½ cents per pound for available phosphoric acid, 14 cents per pound for ammonia, and 5 cents per pound for potash. The phosphoric acid is rated one-half cent lower and ammonia one cent per pound lower than for past seasons. The reprinted analyses of 1894 are calculated on the new basis of valuations.

Hog Cholera.

A correspondent writes: "Could you give me anything that will prevent hog cholera, or that we could use as a cure? Great numbers of hogs are dying here with it daily. Please tell me if there is any remedy or even a preventive." The answer to this in substance was: There are preventive measures which

may be used and which may ward off the disease in a large number of cases. Indeed, some breeders claim to be able to cure cholera if they can get to the animals before the appetite is gone, but not after food is refused. This remedy or preventive is carbolic acid. How little will protect, or how much the patient can bear I am not informed, but about 10 drops would be a dose for an adult and less for younger swine.

The better way to feed and administer medicine with food would be to prepare all food immediately before feeding, stir in as much medicine as needed for the pigs being fed. Then clean up and disinfect afterward. Clean up all foul places to which pigs have access. Keep sleeping places warm and dry. Try to prevent buzzards from visiting pig runs and feeding places. Bury the dead, or better cremate dead bodies, and disinfect with carbolic or bichloride solutions or with a cheap solution made by suspending a coarse bag containing 20 pounds copperas, (sulphate of iron) in a barrel of soft water. After a little time the solution can be used as wanted and more water added until the copperas is gone from the bag.

The health of the pig may be promoted by keeping a mixture, made as follows, where the pigs can get it at will: 1 peck hard wood ashes; 1 pint salt, 1 peck charcoal. This recipe might be extended by adding ½ lb. sulphur, ½ lb. black antimony and 2 lbs. sulphate of iron, pulverized.

Great dependence should be placed on prompt destruction of dead bodies and proper disinfection immediately afterward, accompanied by the administration of carbolic acid with this mixture kept where pigs can eat it if they are inclined to do so.—F. E. Emery, Agriculturist, N. C. Experiment Station.

The Ox-Warble or Meel Fly.

One of the most destructive pests of domestic animals is the ox-warble or hot fly, *hypoderma lineata*. This parasite, while probably not very painful to the animal infested, is expensive to the owner of the animal since hides or skins showing warble holes are docked one-third of their value. The presence of the maggots further decreases the amount and quality of the animal's flesh so that on the average, for a two year-old steer, the loss is apt to be above \$10 or \$12.

The fly which causes this damage is about the size of and very much resembles a honey bee. It deposits its eggs in spring, during the period of shedding of hair, on the legs, tail and belly of cattle, preferably yearlings. By licking these parts the eggs are taken into the animal's gullet where the mag-

got hatches and clings to the walls. It soon bores into the tissues and eventually—during the succeeding fall or winter—finds its way to the animal's back where it forms a tumor just beneath the skin. Here it rests for some time and completes its growth as a maggot. Each tumor, if closely examined, will show a small pore through which the maggot obtains air. When full grown the maggot enlarges this pore and through it comes out and drops to the ground into which it enters and remains dormant as a *pupa* for about six weeks. It then comes forth as a perfect fly to lay its eggs as before.

REMEDIES.—During the period of hair shedding, horned cattle should have the tail, belly and legs—especially the parts just above the hoofs—rubbed two or three times a week with a mixture of kerosene or fish oil and powdered sulphur. In January and February the backs of cattle should be carefully examined for the tumors which are readily seen or felt just beneath the skin and the enclosed maggot squeezed out and killed. A little crude carbolic acid or mercurial ointment should be then rubbed on the spot. If the maggot can not be squeezed out the oil or ointment should be well rubbed in so as to close up the breaking pore in the tumor thus smothering the maggot.

The warble fly is not a great traveller and if all the maggots infesting cattle on any farm are killed in January or February that farm will be nearly or quite free from the parasite for some years unless introduced with new stock. Killing the maggots in the tumors is the easiest and surest way of getting rid of this expensive intruder. Gerald McCarthy, N. C. Experiment Station.

How Relative Values Per Ton are Calculated for Fertilizers and How They Can Be Utilized by Farmers.

It may be of interest to some to know how ton values are calculated, using the seaboard valuations for the unmixed constituents of a fertilizer. The amount or percentage of either of these constituents present in the fertilizers is given by the analysis. This represents parts per 100. The percentage is accordingly multiplied by the valuation per pound to get value per 100 pounds. This is now multiplied by 20 to determine the value per ton (2,000 pounds). This is done for all three constituents, and the three amounts are added together to arrive at the value per ton.

The following is an example:

Percentage or lbs per 100.	Per 100 lbs.	Per ton
9.64 Available Phos. Acid at...		
4% per lb.	\$0.4333	\$8.63
2.36 Ammonia at 14c per lb.	.3346	6.69
3.05 Potash at 5c per lb.	.1525	- 3.05
Total value.	\$0.9209	\$18.42

The value per ton as here given represents the market price per ton at the seaboard of the unmixed ingredients. For interior points, railroad freights to those points must be added.

The values per ton represent unmixed ingredients. They show what would be the approximate cost of the ingredients to a farmer in case he bought them himself for mixing. The cost is, as stated, on the basis of cash in small lots (less than five tons) in bags, at the seaboard. By a comparison of these values as given by the Experiment Station, a farmer can see how much he is being charged over and above the actual cost of the raw materials. The manufacturer in addition has to allow for mixing the ingredients, branding the bags, handling, fixed charges, agent's commissions, profits, etc., together with freight to the interior point. The cost of mixing, sacking and branding the bags will not vary greatly from \$2.60 per ton.

Considering all items, the price of a mixed ammoniated fertilizer at an interior town, ought not to be more than 25 to 33% per cent. greater than the relative seaboard value per ton of ingredients as given in the tables found by analysis, with, of course, the freight from the seaboard to the interior point added.—H. B. Battle, N. C. Experiment Station.

Cotton Seed Feed.

A correspondent (R. N. P.—Reidsville, N. C.) writes: Will you kindly write me your opinion in regard to the value of "cotton seed feed" as prepared at the mills as an economical food compared with other foods raised on the farm? Do you think it will do to feed it to horses and mules?

Cotton seed meal is one of the most valuable and cheapest foods for stock we have on the market. It is now being fed in small quantities to the Station's mules but is not being relished by them.

Cotton seed hulls are a coarse food containing little digestible matter. They are, however, an excellent medium for dividing fine meal in the animal stomach. Please note pages 423 to 426 of Bulletin 109 which bears directly on your question.

See also articles II to V in Bulletin 81. The digestibility of cotton seed hulls as laid down in the latter has been reduced by later work. "Cotton seed feed" of the mills corresponds nearly to rations numbered 3 and 4, page 421 of Bulletin 109 (approximately 5 lbs. hulls to 1 lb. meal).

Their use for stock depends on price of straw and its preparation. With straw or corn stalks on hand no one can afford to waste either to buy hulls

ready mixed with meal. It will pay farmers as well to follow Bulletin 104 in saving stalks and thus mix their own feed as cotton "seed feed" pays the oil mill men.

Our cotton seed feed rations contained the following amounts of digestible nutrients per ton of food:

	Protein	Carbohydrates	Fat	Ratio	Heat Equivalents
Cotton seed hulls.....	4.88	646.40	46.40	106.6	756.6
Cotton seed meal.....	681.00	430.60	183.80		1528.8
Cotton seed hulls 7 to 1 of meal.....	75.12	632.20	19.94	10.8	752.6
Cotton seed hulls 6 to 1 of meal (3).....	83.33	658.44	65.14	9.71	889.6
Cotton seed hulls 4 to 1 of meal (4).....	120.50	731.04	67.60	7.62	1005.0
Cotton seed hulls 3 to 1 of meal.....	156.25	720.60	82.70	5.89	1064.6
Cotton seed hulls 2.8 to 1 of meal.....	165.26	651.90	81.63	5.13	1002.5
Cotton seed hulls 2.4 to 1 of meal.....	176.59	647.70	84.97	4.88	1017.2
Cotton seed hulls 2 to 1 of meal.....	203.70	642.13	88.27	4.27	1046.2
Whole raw cotton seed.....	196.60	553.40	337.60	7.13	1521.4
Whole roasted cotton seed.....	157.20	581.80	329.20	9.19	1464.4
Crimson clover Hay.....	210.00	826.20	17.96	3.76	1077.7
Corn meal.....	106.40	1183.20	72.20	14.02	1453.5

The crimson clover hay and corn meal are added to compare with these rations.

The heat equivalent is obtained by adding to the sum of the carbohydrate and protein 2.27 times the fat.—F. E. Emery, Agriculturist, N. C. Experiment Station.

Questions and Replies.

The Station will be glad to extend its usefulness by answering as far as possible questions on agricultural topics sent by any one in North Carolina who may desire to ask for information. Address all questions to the N. C. Agricultural Experiment Station, Raleigh, N. C. Replies will be written as early as possible by the member of the Station staff most competent to do so, and when, of general interest, they will also ap-

pear in these columns. The Station desires in this way to enlarge its sphere of usefulness and render immediate assistance to practical farmers.

Influence of the Moon.

The people here in my country are governed by the moon in nearly all things they do. They even will not make kraut, nor the old women will not make soap unless the sign is right. Hogs must be slaughtered or colts weaned according to the moon. Please give me any information or cite me to literature upon the above subject.—Dr. C. H. L. Farmers, N. C.

(Answered by H. B. Battle, Director N. C. Experiment Station.)

The belief that the moon has some effect upon the growth of crops and various other deeds of men is widespread in certain regions. There can be no reasonable claim that the moon does really influence any thing upon the earth in this way, and such traditions doubtless have descended from our ancestors, who thought very much more of natural objects and their possible effect upon their actions than we in this day. Doubtless one reason why this idea obtained credence is that formerly those who considered such to be the case were very observant and very careful in their work, and hence necessarily were more successful; such being the case they believed more than before as to the cause of their success and telling others of it caused them also to become firm believers.

To give an illustration of this belief, one part of the country may think that a certain phase of the moon indicates dry weather, whereas in other parts of the country, others may believe that it portends wet weather, or these beliefs may be entertained by different parties in the same region. Of course it is impossible for these various results to occur at the same place and at the same time.

Feeding Cotton-Seed Products.

A short time ago I received from the cotton oil company a circular showing the protein and fat constituents of fifty American feeding materials with their rank in feeding value, etc. If their report is correct we cattle feeders are not feeding the proper feeds to make weight. I am feeding twenty-two steers of 1,000 pounds weight this winter. Here is what they are being fed. I would be pleased to have your opinion on it. The first two weeks I had ground together corn and wheat, one bushel of each, and how take two bushels corn and one bushel wheat. Give them two and a half bushels of this on top of eight bushels smooth wheat chaff in the morning, then all the out corn fodder (stover) they will eat. At noon two and a half bushels mixture with the chaff and in the evening two and a half bushels mixture, as before, with chaff followed by as much out corn fodder as they will eat. Access to water twice a day. All are dehorned and loose. I herewith enclose the small circular with rank of feeding values. Would also like to have your opinion of the cotton seed meal and hull business. If it is as good as they say, it would pay to use it. Corn is worth here 45 cents per bushel; wheat, 54 cents; oil meal \$24 per ton; gluten meal \$20 per ton; cotton seed meal about \$21, and cotton seed hulls \$9.10. If you have the time and will give me your

opinion on how I can make the most gain on these steers I certainly will be greatly obliged. J. A. E., York Pa.

(Answered by F. E. Emery, Agriculturist N. C. Experiment Station.)

I find there is some misrepresentation in the circular. For instance, the figures given for cotton seed meal and hulls are the extreme highest ones found in a large number of analyses. They represent composition and not digestibility—two very different considerations. Please consult table I pp 285—6, Bulletin 106 North Carolina Experiment Station on this question.

You can not go far wrong feeding a good grain ration with coarse by-products made on the farm. Your corn fodder (I believe it has had the ears husked out of it and is called *stover* to distinguish it from that grown thick and not allowed to produce ears) is better than cotton seed hulls. Your wheat chaff is also worth more than the hulls. Make your own comparisons as to price.

Now for your ration. It is too wide in the ratio of protein to carbohydrates. I would not advise you to change your proportion of two of corn to one of wheat but to feed only 200 pounds of it per day mixed with 100 pounds of cotton seed meal. Feed this on the chaff as before and give *stover* the same, all the steers will eat twice daily. I have assumed that this chaff weighs $6\frac{1}{4}$ pounds per bushel, making 150 pounds daily and that the steers would eat 250 pounds of *stover* daily. This ration would be about the standard for 1,000 pounds live weight. It requires 235 lbs. less of corn and wheat mixture per day; or putting the 100 pounds of cotton seed meal in place of 100 of the mixture saves 135 pounds per day and the steers are being fed a fattening ration. Even if this does not seem to be increasing their weight so fast, it ought to make flesh at a cheaper rate per pound, hence a more profitable ration.

The change from mixture of corn and wheat 1 to 1 to 2 of corn to 1 of wheat only changes the protein 0.8 pound, the carbohydrates 0.6 pound and fat 0.76 pound per day in the whole ration for 22 steers. It is, however, a change in the right direction from 2d to 3d fattening period. Two of corn to one of wheat for first and third periods and 1 to 1 for second would be a good formula with the other articles as fed to above steers.

Top Dressing for Clover.

Please write me what you think the best thing to top-dress red clover in the absence of stable manure. Wish to take cost into consideration. Can you tell me what is best to sow in and around fish ponds for carp to feed upon, and where I can get the seed?—H. F. F., Taylor, N. C.

(Answered by H. B. Battle, Director, N. C. Experiment Station.)

A good top-dressing for clover would be 100 pounds acid phosphate 100 pounds kainit to the acre. Acid phosphate contains plaster, which is of material benefit to clover, besides the phosphoric acid it contains; potash in kainit is a useful addition also. Our Botanist, Mr. McCarthy, recommends the following to be planted around fish ponds for carp: "Good plants for fish ponds are the following:

Wild Rice.....*Zizania aquatica*
White Water Lily.....*Nymphaea odorata*
Yellow Pond Lily.....*Nuphar advena*
Pickerel Weed.....*Pontederia cordata*.

Seeds of the above can probably be obtained from any of the large seedsmen. All the above are native to this state, very prolific and hardy rapid growers and favorite food for fishes wherever they occur."

Building a Silo.

I want to build a silo out of brick. I would like to know if it would do built of bricks. How is it built and would common mortar do to build it with or would it have to be cement? The place I want to build it on is high ground, against my barn. How do you put the feed in and do you salt it?—R. B. F., Durham, N. C.

(Answered by F. E. Emery, Agriculturist, N. C. Experiment Station.)

I have seen a brick silo in the ground like a well which kept the silage very well. The trouble with a below ground silo is the cost of excavating, while a brick wall above ground strong enough to resist the pressure at filling, would probably cost too much. Your attention is called to the plans illustrated in Bulletin No. 80 of this Station. The round form is the best. A steel silo can now be purchased which would last a life time.

Feed is cut $\frac{3}{8}$ to $1\frac{1}{4}$ or even 2 or 3 inches long and run up into the silo on a carrier attached to the cutting machine. If the ground is high and you can drive on the uphill side it will be best to do that; set the machine so the silage will fall into the silo and dispense with the carrier. No salt is used. Simply keep the top leveled and tread the sides and soft places in filling so it will settle even.

Cutting Oats for Feed.

Please let me know which would be the better way to cut oats for feed; to cut them in a tough state while straw is green or wait until ripe. I want them to feed as hay and am under the impression to cut them green would be best.—S. J. B., Granite Hill, N. C.

(Answered by F. E. Emery, Agriculturist N. C. Experiment Station.)

Oats cut while yet early in the milk stage will be best for hay, as the valuable food compounds will then be largely distributed in the leaves and stems. If left later the movement of these compounds to the grain carries much from those parts which remain comparatively valueless straw, while the nourishment of the crop is largely concentrated in the kernels.

TABLE OF CONTENTS.

MISCELLANEOUS AGRICULTURAL TOPICS.		PAGE.	
	PAGE.	Creamer or separator for southern North Carolina	PAGE.
List of officers	162	Bees and bee worms	171
Preface	163	Setting out a peach orchard	172
The Experiment Station bulletins	164	Value of one day's cow rations as a fertilizer	172
Title-page changed	164	North Carolina weather during October, 1894	172
The chestnut and its weevil	164	Flowering bulbs in North Carolina	173
The army worm	164	Improve your stock	173
Crimson clover in 1894	165	Rational stock feeding	173
The weather in North Carolina during 1893	165	Rear calves only from the best cows	173
Self-sucking cows	165	Tokay grapes	174
Advanced summary of meteorological reports for North Carolina, August, 1894	166	Value of manure	174
Scuppernongs can be pruned	166	Blue joint grass	174
Bones as fertilizers and how to use them	166	Destroying wild onions	175
Hollow horn and hollow tail	167	Mixing fertilizers at home	175
Recent bulletins of the Experiment Station	168	Asiatic pears	175
Keeping sweet potatoes through winter	168	Fertilizer analyses for 1895	176
Advanced monthly summary of meteorological reports for North Carolina, September, 1894	169	Hog cholera	176
The Russian thistle	169	The ox-warble or heel fly	176
Error in report of crimson clover-seed yield for 1894	170	How relative values per ton are calculated for fertilizers, and how they can be utilized by farmers	177
Pea and bean weevils	170	Cotton seed feed	177
Ripening tomatoes in winter	170	Influence of the moon	178
Variety of asparagus for planting	171	Feeding cotton seed products	178
To destroy sprouts and stumps	171	Top dressing for clover	179
		Building a silo	179
		Cutting oats for feed	179